The Treadmill Desk: Sitting Could Kill You, but Can You Walk and Work Well?

Élise Labonté-LeMoyne, HEC Montreal, Radhika Santhanam, The University of Oklahoma, Pierre-Majorique Léger, HEC Montreal, François Courtemanche, HEC Montreal, Sylvain Sénécal, HEC Montreal

Corresponding author: elise.labonte-lemoyne@hec.ca

Information Technology (IT) has greatly contributed to the increase in labor productivity in recent decades (Tambe et al., 2012). The downside is that workers now spend most of their working time sitting at their desks while they work on their IT consoles. Research findings indicate that time spent by employees sitting in front of their consoles is directly related to increased risk of cardiovascular diseases, diabetes, and musculoskeletal pain, and importantly, contributing to an increased risk for death (van der Ploeg et al., 2012). Groups, including the American Heart Association and the American College of Sports Medicine, have appealed for a change in public policy to decrease the number of daily hours spent by employees on this type of sedentary work.

One of the solutions proposed is through the use of a treadmill desk that can reduce the sitting time (http://goo.gl/FYFxsv). With this, workers can walk at low speeds while performing their regular tasks (e.g., make telephone calls, write reports or send email). Studies show that this practice of walk-and-work could have a positive impact on employee health, including weight loss, and improved cholesterol profiles, (Levine et al., 2007). In addition, improving the health of workers leads to other societal benefits, such as lower medical costs and reduced absenteeism from work (Aldana et al., 2001).

The promise of better health is predicted, but the current adoption and research on the impact of this device is sparse. Some early research suggests that there is no impact of the use of a treadmill desk on basic computer interactions (e.g., reaction time with the mouse, typing rhythm; Alderman et al., 2013), but no study has investigated the effect of the device on the cognitive abilities of employees, their performance on complex tasks, and their work perceptions.

Given the important potential health benefits associated with the use of this device, and a dearth of research investigating its impact on employees' performance, the objective of the current study is to investigate the influence of using a treadmill desk (vs. sitting down) on IT employees' cognitive abilities, their performance and perceptions.

We report on an ongoing lab experiment with 20 participants. In this study, subjects had to perform an office task during 40 minutes (i.e., reading a text and managing emails). Half of these participants performed this in a seated position, while the other half performed it while walking at 2.25 km/h using a treadmill desk. At the end of the task, cognitive abilities of the participants were evaluated. We first looked at memory retention (with true or false questions based on the text and emails; Léger et al., 2014), while measuring the participants' cognitive fatigue with EEG (Cao et al., 2014). Second, we evaluated executive functions with EEG during a Tower of London test (Krikorian et al., 1995). Finally, self-perceived attitude toward the task was captured with a survey.

This poster will present preliminary results from the experiment. This study will be followed by a larger scale experiment in October 2014 with equipment and tests to measure attention and self-efficacy during the use of the treadmill desk as well as the effects of multi-day use.

REFERENCES

- Alderman, B. L., Olson, R. L., and Mattina, D. M. 2013. "Cognitive Function During Low Intensity Walking: A Test of the Treadmill Workstation," *Journal of Physical Activity and Health*.
- Tambe, P., and Hitt, L. M. 2012. "The Productivity of Information Technology Investments: New Evidence from IT Labor Data," *Information Systems Research*.
- van der Ploeg, H. P., Chey, T., Korda, R. J., Banks, E., and Bauman, A. 2012. "Sitting Time and All-Cause Mortality Risk in 222 497 Australian Adults," *Archives of Internal Medicine* (172:6), pp. 494-500.
- Levine, J. A., and Miller, J. M. 2007. "The energy expenditure of using a "walk-and-work" desk for office workers with obesity," *British Journal of Sports Medicine* (41:9), pp. 558–561.
- Léger, P.M., Senecal, S., et al. 2014. "Precision is in the Eye of the Beholder: Application of Eye Fixation-Related Potentials to Information Systems Research," *Journal of the Association for Information Systems.*
- Aldana, S. G., and Pronk, N. P. 2001. "Health Promotion Programs, Modifiable Health Risks, and Employee Absenteeism," *Journal of Occupational and Environmental Medicine* (43:1), pp. 36.
- Cao, T., Wan, F., Wong, C. M., da Cruz, J. N. and Hu, Y. 2014 "Objective evaluation of fatigue by EEG spectral analysis in steady-state visual evoked potential-based brain-computer interfaces," *Biomedical Engineering Online* (13:1).
- Krikorian, R., Bartok, J., & Gay, N. 1994. "Tower of london procedure: A standard method and developmental data," *Journal of Clinical and Experimental Neuropsychology* (16:6), pp. 840-850.